

1. A rotary electromechanical device, comprising:

A1 a rotor, the rotor comprising a hollow hub and a plurality of magnet poles, the hollow hub having at least one aperture at each end to form at least one first passage extending through the hollow hub;

a stator; and

a sealed casing surrounding the rotor and the stator so that cooling air that flows through the rotor travels in a closed path within the sealed casing.

A2 7. The device of claim 1, comprising:

at least one second passage a) having walls formed by at least one of the stator and the outer casing, and b) communicating with each end of the at least one first passage.

A3 12. A method for cooling a rotary electromechanical device having a rotor, a stator and a sealed casing surrounding the rotor and the stator so that cooling air that flows through the rotor travels in a closed path within the sealed casing, comprising:

providing the rotor with a hollow center and apertures at each end of the rotor; and  
driving air through the hollow center of the rotor via the apertures; and  
driving air through passages formed between the sealed casing and the stator.

14. An electric machine, comprising:

A4  
a rotor;

a sealed casing surrounding the rotor so that cooling air that flows through the rotor travels in a closed path within the sealed casing; and

means for driving air through a center of the rotor.

17. The electric machine of claim 14, comprising:

AS  
a stator partially surrounding the rotor within the sealed casing; and

means for conveying air exiting from one end of the rotor, to the other end of the

rotor.

18. The electric machine of claim 14, comprising:

bearings encompassing a shaft fixed to the rotor and supporting the shaft relative to the sealed casing.

19. The method of claim 12, comprising:

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supporting the rotor relative to the sealed casing via bearings encompassing a shaft fixed to the rotor.

20. The rotary electromechanical device of claim 1, comprising:

bearings encompassing a shaft fixed to the rotor and supporting the shaft relative to the sealed casing.

21. A rotary electromechanical device, comprising:

a casing;

a rotor, the rotor comprising a hollow hub and a plurality of magnet poles, the hollow hub having at least one aperture at each end to form at least one first passage extending through the hollow hub;

a shaft secured to the rotor in a non-rotatable manner; and

bearings mounted on the casing for supporting the shaft.

22. The device of Claim 21, wherein the casing is sealed and surrounds the rotor and the stator so that cooling air that flows through the rotor travels in a closed path within the sealed casing.

23. The device of Claim 22, comprising air passages formed between the sealed casing and the stator.

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